

The Application and Practice Research of Industry University Research Cooperation Model in the Construction of Computer Science

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Abstract: The industry university research cooperation model, as an effective educational model, can organically integrate resources from the industry, academia, and education sectors, providing computer science students with rich and practical learning experiences. However, in the practical application of the industry university research cooperation model in the construction of computer majors, it faces practical difficulties such as incomplete cooperation mechanisms, low industry participation, disconnection between academic research and industry demand, and mismatch between talent cultivation and industry demand. In this context, schools should actively explore the construction path of computer majors based on the cooperation model between industry, academia, and research. By establishing a platform for industry, academia, and research cooperation, strengthening industry participation, promoting talent cultivation and matching industry needs, and strengthening intellectual property protection, measures should be taken to continuously improve and innovate the cooperation mechanism, making greater contributions to promoting the development of China's computer industry.

1. Introduction

With the rapid development of information technology, computer science has become one of the most promising and promising majors in the world today. However, to achieve success in the field of computer science, relying solely on school education is not enough. The industry university research cooperation model, as an effective educational model, organically combines resources from industry, academia, and education, providing students with a richer and more practical learning experience, while also promoting communication and cooperation between industry and academia. In order to provide beneficial ideas and references for the reform and innovation of computer professional education through in-depth exploration of the application and practice of the industry university research cooperation model in the construction of computer majors.^[1]

2. Theoretical basis of industry university research cooperation model

Industry university research cooperation refers to the process in which industry, academia, and education collaborate in a specific field based on their respective strengths and resources to achieve technological and knowledge innovation. The industry university research cooperation model refers to the process of industry university research cooperation, in which all parties adopt certain organizational forms and collaborative methods based on their own needs and interests to jointly promote the development of projects or undertakings.

The theoretical foundation of the industry university research cooperation model is multifaceted, mainly including industrial economics, academic research theory, education and teaching theory, organizational theory, and so on. One is industrial economics, which believes that the development of industries requires continuous innovation and technological progress, and the realization of technological innovation requires cooperation between the industry, academia, and education sectors. The second is academic research theory. The research achievements of the academic community require the application and transformation of the industry, and the demand of the industry will also drive the deepening and expansion of academic research. The third is the theory

of education and teaching. The mission of the education community is to cultivate talents with innovative spirit and practical abilities. Industry university research cooperation can provide students with more rich and practical learning experiences, and also provide useful ideas and references for education and teaching reform and innovation.^[2] The fourth is organizational theory. Industry university research cooperation requires reasonable arrangements and coordination among all parties in terms of organizational form, collaboration methods, and benefit distribution, in order to achieve cooperation goals and effects.

3. The application dilemma of the industry university research cooperation model in the construction of computer science majors

3.1 Insufficient cooperation mechanism

One of the application difficulties of the industry university research cooperation model in the construction of computer science is that the cooperation mechanism is not perfect enough. This is mainly due to the lack of common standards and norms among all parties in cooperation, making it difficult to form a stable cooperative relationship. For example, companies may be unwilling to engage in technical cooperation with universities due to concerns about leaking trade secrets; Universities may not be able to provide sufficient support for enterprises due to a lack of funds and resources.^[3] In addition, due to the different interests and demands of both parties in the cooperation, it is easy to lead to instability and conflicts in the cooperation relationship, which can affect the smooth progress of industry university research cooperation.

3.2 Low industry participation

In the cooperation between industry, academia, and research, the participation of the industry is very important. However, in practice, due to differences in the focus of work and awareness of education in the industry, the participation of the industry is not high, making it difficult to provide sufficient resources and support for the construction of the computer major. This is mainly due to the low recognition of research results from universities in the industry, which makes it difficult to apply them to practical production. At the same time, there are also problems such as difficulty in technology transfer and unclear ownership of intellectual property rights, which will reduce the enthusiasm of the industry to participate in cooperation. In addition, due to the fact that university research is often cutting-edge research oriented towards the future, there is a certain disconnect between it and the actual needs of the industry, which can also lead to insufficient investment and support from the industry for university research.

3.3 Academic research is disconnected from industrial demand

The research results of the academic community need to be combined with the needs of the industry in order to truly realize their value. However, in practice, due to a certain disconnect between academic research and industrial demand, academic research results are difficult to be recognized and applied by the industry. This is mainly because academic research is often based on cutting-edge and exploratory research directions, while the industry pays more attention to practical applications and market demand. This leads to difficulties in directly applying academic research results to industries or requiring long-term transformation and improvement in industry university research cooperation. In addition, due to poor communication between academic research and the industry, it is also difficult to timely understand the needs and pain points of the industry, resulting in a significant disconnect between research direction and actual needs.

3.4 Mismatch between talent cultivation and industrial demand

Graduates majoring in computer science need to possess certain practical and innovative abilities, but in practice, due to the disconnect between talent cultivation and industry demand, students lack practical experience and practical abilities, making it difficult to meet the needs of the industry. This is mainly due to the current talent cultivation mode of computer science majors in universities placing too much emphasis on imparting theoretical knowledge, while neglecting practical

application and vocational skill cultivation, resulting in students being unable to meet the actual needs of enterprises after graduation. At the same time, due to the low participation of the industry in talent training programs for universities, it is also difficult to timely understand the actual needs and employment standards of enterprises, thus unable to provide students with more practical training programs that are closer to their actual needs.^[4]

4. The practical path of the industry university research cooperation model in the construction of computer science majors

4.1 Establishing an Industry University Research Cooperation Platform

Establish an industry university research cooperation platform to provide a platform for communication and cooperation between industry and academia, promoting cooperation and exchange between both parties. The platform can include online and offline communication activities, forums, seminars, etc. Establishing such a platform can effectively promote cooperation and exchange between industry, academia, and higher education institutions, promoting technological innovation and talent cultivation. Specific measures include: building an online platform to provide convenient communication channels for industry university research cooperation; Establish a cooperation mechanism, clarify the responsibilities and rights of all parties, and provide more stable and sustainable guarantees for cooperation; Strengthen the management of the platform to ensure its normal operation and information security; Continuously optimize the platform's functions and services, improve the platform's usage value and user experience.

4.2 Strengthening Industry Participation

Strengthen the participation of the industry in industry university research cooperation, encourage enterprises to participate in cooperation projects, provide practical technical and resource support, and also provide more practical and employment opportunities for students. This approach can enable higher education institutions to better understand industry needs and trends, while also allowing the industry to have a deeper understanding of the research achievements and talent cultivation situation of higher education institutions. Specific measures include strengthening the participation and voice of industry representatives, allowing them to participate in the decision-making process of professional construction; Establish an industry university research cooperation fund to provide more financial support for the industry and encourage them to actively participate in professional construction; Strengthen communication and exchange between the industry and higher education institutions, and establish closer connections and cooperative relationships.

4.3 Promoting the matching of talent cultivation with industry demand

Promote the matching of talent cultivation with industrial needs, encourage cooperation between university teachers and enterprises, develop courses and training plans that are more tailored to practical needs, and provide students with more practical skills and knowledge. This approach can enable higher education institutions to better understand industry needs and trends, while also enabling students to better adapt to the needs of the job market. Specific measures include: establishing an industry university research cooperation platform to provide students with more practical and employment opportunities; Strengthen the participation and voice of industry representatives to enable them to participate in the formulation and adjustment of professional training plans; Strengthen cooperation with enterprises to provide students with more practical and employment opportunities; Establish an industry university research cooperation fund to provide more financial support for higher education institutions and encourage them to actively promote the matching of talent cultivation with industry demand.

4.4 Strengthening Intellectual Property Protection

Strengthen intellectual property protection, provide more stable and sustainable guarantees for industry university research cooperation, encourage enterprises and universities to strengthen

cooperation and exchange of intellectual property, promote the transfer and transformation of intellectual property, and bring more commercial value and social benefits to the industry and academia. This approach can protect the technical achievements and intellectual property rights of both parties involved in the cooperation, while also enhancing the trust and long-term willingness of both parties. Specific measures include: establishing an intellectual property protection mechanism, clarifying the ownership and protection methods of intellectual property rights between both parties in cooperation; Strengthen intellectual property training and awareness education to enable both parties to understand the importance and protection methods of intellectual property; Establish an intellectual property management platform to facilitate the registration, management, and maintenance of intellectual property by both partners.

5. Conclusion

In today's rapidly developing information age, industry university research cooperation has become an important force in promoting the construction of computer majors and industrial development. We realize that only by strengthening industry university research cooperation, promoting the matching of talent cultivation with industrial demand, and strengthening intellectual property protection can we achieve a win-win situation in the construction of computer science and industrial development. In the future, we need to further deepen the research on the cooperation model between industry, academia, and research, continuously improve and innovate the cooperation mechanism, and make greater contributions to promoting the development of China's computer industry.

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